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ICF International / Laboratory Data Consultants
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Chris Lichens, Remedial Project Manager
Site Cleanup Section 4, SFD-7-4

THROUGH: Rose Fong, ESAT Task Order Manager (TOM) RF
Quality Assurance (QA) Program, MTS-3

FROM: Doug Lindelof, Data Review Task Manager
Region 9 Environmental Services Assistance Team (ESAT)

ESAT Contract No.: EP-W-06-041
Technical Direction Form No.: 00105053

DATE: May 1, 2007

SUBJECT: Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	Omega Chem OU2
Site Account No.:	09 BC LA02
CERCLIS ID No.:	CAD042245001
Case No.:	36072
SDG No.:	MY34K5
Laboratory:	Sentinel, Inc. (SENTIN)
Analysis:	CLP Dissolved Metals by ICP-MS and Dissolved Mercury
Samples:	10 Groundwater Samples (see Case Summary)
Collection Date:	March 8, 9, and 12, 2007
Reviewer:	Stan Kott, ESAT/Laboratory Data Consultants

This report has been reviewed by the EPA TOM for the ESAT contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

Attachment

cc: Cynthia Gurley, CLP PO USEPA Region 4
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [X] Yes [ ] No

Data Validation Report

Case No.: 36072
SDG No.: MY34K5
Site: Omega Chem OU2
Laboratory: Sentinel, Inc. (SENTIN)
Reviewer: Stan Kott, ESAT/LDC
Date: May 1, 2007

I. CASE SUMMARY

Sample Information

Samples:	MY34K3, MY34K5 through MY34K9, and MY34L0 through MY34L3
Concentration and Matrix:	Low/Medium Concentration Groundwater
Analysis:	CLP Dissolved Metals by ICP-MS and Dissolved Mercury
SOW:	ILM05.3
Collection Date:	March 8, 9, and 12, 2007
Sample Receipt Date:	March 10 and 14, 2007
Preparation Date:	March 15, 2007
Analysis Date:	March 16, 19, and 21, 2007

Field QC

Field Blanks (FB):	Not Provided
Equipment Blanks (EB):	MY34K9
Background Samples (BG):	Not Provided
Field Duplicates (D1):	MY34K5 and MY34K6

Laboratory QC

Method Blank & Associated Samples:	Preparation Blank-Water (PBW) and samples listed above
Matrix Spike:	MY34K3S
Duplicates:	MY34K3D
ICP Serial Dilution:	MY34K3L
Analysis:	CLP Dissolved Metals by ICP-MS and Dissolved Mercury

Analyte	Sample Preparation and Digestion Date	Analysis Date
ICP-MS Metals	March 15, 2007	March 19 and 21, 2007
Mercury	March 15, 2007	March 16, 2007
Percent Solids	Not Applicable	Not Applicable

CLP PO Action

None

Sampling Issues

1. The laboratory stated that the temperature indicator bottle was not provided in the cooler for samples MY34K9 through MY34L3. The laboratory used a laser thermometer to determine the cooler temperature to be -3.5°C. This temperature exceeds the 4°±2°C limit specified in the method; however, no adverse effect on data quality is expected.

2. The Traffic Report/Chain of Custody (TR/COC) record form did not specify a sample to be used for laboratory QC. The laboratory selected sample MY34K3 for QC analysis and notified the Sample Management Office (SMO). The effect on data quality is not known.

3. The laboratory indicated the samples were prepared at half the volumes specified in the preparation methods due to insufficient sample volume. No adverse effect on data quality is not known.

4. The equipment blank field quality control (QC) sample MY34K9 was not sent blind to the laboratory. The effect on data quality is not known.

Additional Comments

All method requirements specified in the EPA Contract Laboratory Program (CLP) Inorganic Statement of Work (SOW), except as noted, have been met.

Analytical results are listed in Table 1A with qualifications. Definitions of data qualifiers used in Table 1A are listed in Table 1B.

This report was prepared in accordance with the following documents:

- Region 9 Standard Operating Procedure 906, *Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Inorganic Data Packages*;
- *USEPA Contract Laboratory Program Statement of Work For Inorganic Analysis Multi-Media, Multi-Concentration* ILM05.3, March 2004; and
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Data Completeness	Yes	
2.	Sample Preservation and Holding Times	Yes	
3.	Calibration	Yes	
	a. Initial		
	b. Initial and Continuing Calibration Verification		
	c. CRQL Check Standard (CRI)		
	d. ICP-MS Tuning Analysis		
4.	Blanks	No	B,C
5.	ICP Interference Check Sample (ICS)	Yes	
6.	Laboratory Control Sample (LCS)	Yes	
7.	Duplicate Sample Analysis	Yes	
8.	Matrix Spike Sample Analysis	Yes	
9.	ICP Serial Dilution Analysis	Yes	
10.	ICP-MS Internal Standards	Yes	
11.	Field Duplicate Sample Analysis	No	D
12.	Sample Quantitation	Yes	A
13.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) (denoted with an "L" qualifier) are estimated and flagged "J" in Table 1A.

Results above the MDL but below the CRQL are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of quantitation.

B. The following results are qualified as estimated high and flagged "J+" in Table 1A due to equipment blank contamination.

- Chromium and zinc in samples MY34L0, MY34L2, and MY34L3

Sample results greater than the CRQL are qualified as estimated high (J+) unless the concentration of the analyte in the sample exceeds 5 times the amount in any associated blank.

The reported results of 4.3 µg/L for chromium and 3.3 µg/L for zinc in equipment blank sample MY34K9 exceed the respective 2.0 µg/L CRQLs.

An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The intent of an equipment blank is to monitor contamination introduced by the sampling activity, although any laboratory introduced contamination will also be present.

C. The following results are reported as non-detected (U) in Table 1A due to low level preparation blank (PBW) and continuing calibration blank (CCB) contamination.

- Antimony in samples MY34L0, MY34L1, and MY34L2
- Barium in sample MY34K9
- Cadmium in samples MY34L1 and MY34L3
- Mercury in all samples
- Silver in samples MY34K6 and MY34L1
- Vanadium in sample MY34L0

Analyte amounts greater than the MDL but less than the CRQL were found in several blanks at the concentrations listed below.

Analyte	Blank	Concentration
Antimony	CCB3	0.16 µg/L
Barium	PBW	0.74 µg/L
Cadmium	CCB3	0.32 µg/L
Mercury	CCB2 and CCB3	0.10 µg/L
Silver	CCB2	0.15 µg/L
Vanadium	CCB3	0.12 µg/L

Affected sample results greater than or equal to the MDL but less than the CRQL are reported as non-detected (U) at the respective CRQL.

A continuing calibration blank (CCB) consists of deionized, distilled water and reagents. It is analyzed after the continuing calibration verification (CCV) standard, at a frequency of every 10 samples and at the end of the analytical run to monitor analyte carry-over.

A preparation blank is an analytical control that contains distilled, deionized water, or baked sand for solid matrices, and reagents, which is carried through the entire analytical procedure. The preparation blank is used to determine the level of contamination introduced by the laboratory during preparation and analysis.

D. Several relative percent differences (RPDs) and absolute differences were obtained in the analysis of field duplicate pair samples MY34K5 and MY34K6 and are listed below.

Analyte	Field Duplicate RPD/Absolute Difference	CRQL
Chromium	79 RPD	N/A
Cobalt	2.1 µg/L	1.0 µg/L
Copper	7.3 µg/L	2.0 µg/L
Nickel	29 RPD	N/A
Vanadium	147 RPD	N/A
Zinc	80 RPD	N/A

Since sampling variability is included in the measurement, field duplicate results are expected to vary more than laboratory duplicates which have a ±20 RPD or ±CRQL absolute difference criteria for precision. The effect on data quality is not known.

In addition, arsenic and lead were detected in the field duplicate sample MY34K6 at concentrations of 2.7 µg/L and 2.2 µg/L, respectively. Arsenic and lead were not detected in the associated field duplicate sample MY34K5. A RPD is not calculated. Since sampling variability is included in the measurement, field duplicate results are expected to vary more than laboratory duplicates which have a ±20 RPD or ±CRQL criteria for precision. The effect on data quality is not known.

The analysis of field duplicate samples is a measure of both field and analytical precision. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix, sample non-homogeneity, or poor sampling or laboratory technique.

ANALYTICAL RESULTS
Table 1A

Case No. : 36072 SDG No. : MY34K5
Site : OMEGA RECOVERY SERV.
Lab : SENTINEL, INC. (SENTIN)
Reviewer : Stan Kott, ESAT/LDC
Date : 5/01/2007

QUALIFIED DATA
Concentration in ug/L

Analysis Type : Low/Medium Concentration Groundwater Samples for Dissolved Metals by ICP-MS and Dissolved Mercury

Station Location :	HPW6B			HPW5B			HPW5B1			HPW7B			HPW8B			HPW1A (Y34K9) -EB		
Sample ID :	MY34K3			MY34K5 D1			MY34K6 D1			MY34K7			MY34K8			MY34K9 EB		
Collection Date :	3/8/2007			3/9/2007			3/9/2007			3/9/2007			3/9/2007			3/12/2007		
PARAMETER	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
ANTIMONY	1.1L	J	A	0.87L	J	A	0.94L	J	A	0.82L	J	A	0.71L	J	A	2.0U		
ARSENIC	0.34L	J	A	1.0U		D	2.7		D	0.66L	J	A	0.47L	J	A	1.0U		
BARIUM	78.2			222			242			352			141			10.0U		C
BERYLLIUM	1.0U			1.0U			0.14L	J	A	1.0U			1.0U			1.0U		
CADMIUM	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
CHROMIUM	3.2			4.4		D	10.1		D	3.7			4.0			4.3		B
COBALT	3.9			2.4		D	4.5		D	3.0			2.5			1.0U		
COPPER	3.8			0.89L	J	AD	8.2		D	13.0			2.8			2.0U		
LEAD	0.17L	J	A	1.0U		D	2.2		D	0.21L	J	A	0.15L	J	A	1.0U		
MANGANESE	712			640			654			540			336			0.26L	J	A
MERCURY	0.20U		C	0.20U		C	0.20U		C	0.20U		C	0.20U		C	0.20U		C
NICKEL	22.7			10.5		D	14.1		D	24.5			20.1			1.0U		
SELENIUM	3.5L	J	A	3.0L	J	A	2.1L	J	A	1.9L	J	A	8.5			5.0U		
SILVER	1.0U			1.0U			1.0U		C	1.0U			1.0U			1.0U		
THALLIUM	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U		
VANADIUM	0.90L	J	A	1.6		D	10.5		D	0.68L	J	A	1.0U			1.0U		
ZINC	5.1			7.0		D	16.3		D	6.0			4.1			3.3		B

Val - Validity. Refer to Data Qualifiers in Table 1B.
Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.
MDL - Method Detection Limit
N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs
FB - Field Blank, EB - Equipment Blank,
TB - Trip Blank, BG - Background Sample
CRQL - Contract Required Quantitation Limit

ANALYTICAL RESULTS
Table 1A

Case No. : 36072 SDG No. : MY34K5
Site : OMEGA RECOVERY SERV.
Lab : SENTINEL, INC. (SENTIN)
Reviewer : Stan Kott, ESAT/LDC
Date : 5/01/2007

QUALIFIED DATA
Concentration in ug/L

Analysis Type : Low/Medium Concentration Groundwater Samples for Dissolved Metals by ICP-MS and Dissolved Mercury

Station Location :	HPW1A (Y34L0)			HPW1B (Y34L1)			HPW2A (Y34L2)			HPW2B (Y34L3)			MDL			CRQL		
Sample ID :	MY34L0			MY34L1			MY34L2			MY34L3								
Collection Date :	3/12/2007			3/12/2007			3/12/2007			3/12/2007								
PARAMETER	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**	**Result**	**Val**	**Com**
ANTIMONY	2.0U		C	2.0U		C	2.0U		C	1.6L	J	A	0.16			2.0		
ARSENIC	0.54L	J	A	9.9			1.3			2.1			0.22			1.0		
BARIUM	219			410			137			237			0.22			10.0		
BERYLLIUM	1.0U			0.72L	J	A	1.0U			1.0U			0.088			1.0		
CADMIUM	1.0U			1.0U		C	1.0U			1.0U		C	0.38			1.0		
CHROMIUM	4.4	J+	B	38.3			5.7	J+	B	2.9	J+	B	0.57			2.0		
COBALT	1.3			17.0			2.2			0.77L	J	A	0.043			1.0		
COPPER	0.65L	J	A	30.0			2.4			4.3			0.27			2.0		
LEAD	0.19L	J	A	10.0			0.68L	J	A	3.2			0.14			1.0		
MANGANESE	212			1330			236			154			0.15			1.0		
MERCURY	0.20U		C	0.20U		C	0.20U		C	0.20U		C	0.030			0.20		
NICKEL	4.4			33.8			7.0			8.7			0.17			1.0		
SELENIUM	0.51L	J	A	3.2L	J	A	1.6L	J	A	5.0U			0.44			5.0		
SILVER	1.0U			1.0U		C	1.0U			1.0U			0.048			1.0		
THALLIUM	1.0U			1.0U			1.0U			1.0U			0.31			1.0		
VANADIUM	1.0U		C	51.9			2.9			3.6			0.45			1.0		
ZINC	2.4	J+	B	66.4			11.4	J+	B	10.3	J+	B	0.64			2.0		

Val - Validity. Refer to Data Qualifiers in Table 1B.
Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.
MDL - Method Detection Limit
N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs
FB - Field Blank, EB - Equipment Blank,
TB - Trip Blank, BG - Background Sample
CRQL - Contract Required Quantitation Limit

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the document *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004.

U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.